

What is claimed is:

- 1 1. An odd-order low-pass filter for insertion between a POTS device and a home
- 2 telephone wiring network to separate certain high frequency signals on the home
- 3 telephone wiring network from the POTS device, the filter comprising:
 - 4 a first coupled inductor having a pair of windings wrapped about a core;
 - 5 a second coupled inductor having a pair of windings wrapped about a core;
 - 6 a capacitive element disposed between the first and the second coupled inductors
 - 7 and separated from the home telephone wiring network by either the first or the second
 - 8 coupled inductor to prevent high frequency signals from being shorted across the
 - 9 capacitor regardless of whether the home telephone wiring network is coupled to the
 - 10 filter adjacent to the first or the second coupled inductor;
 - 11 a first resistive element disposed in parallel with the one of the windings of the
 - 12 first coupled inductor and a second resistive element disposed in parallel with the other
 - 13 winding of the first coupled inductor to reduce resonance of certain signals between the
 - 14 first coupled inductor and a capacitive element of the associated POTS device.
- 1 2. The odd-order low-pass filter of claim 1, wherein the capacitive element has a
- 2 capacitance in the range of 22-68 nanofarads.
- 1 3. The odd-order low-pass filter of claim 1, wherein the first and second resistive
- 2 elements each have a resistance in the range of 500 – 5000 ohms.

1 4. The odd-order low-pass filter of claim 1, wherein each winding has an inductance
2 in the range of 3 - 8 mH.

1 5. In a communications network including a DSL modem, a POTS device, and a
2 caller ID device coupled to in-premises telephone wiring, an odd-order low pass filter
3 comprising:

4 a first coupled inductor having a pair of windings wrapped about a core;
5 a second coupled inductor having a pair of windings wrapped about a core;
6 a capacitive element disposed between the first and the second coupled inductors
7 and separated from the home telephone wiring network by either the first or the second
8 coupled inductor to prevent high frequency signals from being shorted across the
9 capacitor regardless of whether the home telephone wiring network is coupled to the
10 filter adjacent to the first or the second coupled inductor;

11 a first resistive element disposed in parallel with the one of the windings of the
12 first coupled inductor and a second resistive element disposed in parallel with the other
13 winding of the first coupled inductor, the first and second resistive elements preventing
14 resonance of certain signals between the first coupled inductor and capacitive elements of
15 the associated POTS device from interfering with operation of the caller ID device.

1 6. The odd-order low-pass filter of claim 5, wherein the capacitive element has a
2 capacitance in the range of 22-68 nanofarads.

1 7. The odd-order low-pass filter of claim 5, wherein the first and second resistive
2 elements each have a resistance in the range of 500 – 5000 ohms.

1 8. The odd-order low-pass filter of claim 5, wherein each winding has an inductance
2 in the range of 3 - 8 mH.

1 9. An odd-order low-pass filter for insertion between a POTS device and a home
2 telephone wiring network to separate certain high frequency signals on the home
3 telephone wiring network from the POTS device, the filter comprising:

4 a first pair of inductor windings;
5 a second pair of inductor windings, each of the second pair of windings disposed
6 in series with one of the windings of the first pair of windings;
7 a capacitive element disposed between the first and the second pairs of inductor
8 windings and separated from the home telephone wiring network by the first pair of
9 inductor windings to prevent high frequency signals from being shorted across the
10 capacitor;

11 a first resistive element disposed in parallel with the one of the second pair of
12 inductor windings and a second resistive element disposed in parallel with the other
13 winding of the first pair of inductor windings to reduce resonance of certain signals
14 between the first coupled inductor and a capacitive element of the associated POTS
15 device.

1 10. The odd-order low-pass filter of claim 9, wherein the first pair of inductor
2 windings are both wrapped about a first inductor core and the second pair of inductor
3 windings are both wrapped about a second inductor core.

1 11. The odd-order low-pass filter of claim 9, wherein the first and second resistive
2 elements each have a resistance in the range of 500-5000 ohms.